

- n. Know that when an observation does not agree with an accepted scientific theory, sometimes the observation is mistaken or fraudulent (e.g., the Piltdown Man fossil or unidentified flying objects), and sometimes the theory is wrong (e.g., the Ptolemaic model of the movement of the sun, moon, and planets).

### **Senate Bill 2X**

#### **High School Exit Exam Highlights**

- Senate Bill 2X requires all students completing grade twelve to pass a high school exit exam in language arts and math commencing in 2003–04.
- The bill requires the State Superintendent of Public Instruction to develop and the State Board of Education to approve the exam by October 1, 2000.
- Beginning in 2000–01, grade nine students will be eligible to take the exam.
- Beginning in 2001–02, grade ten students will be required to take the exam.
- The law does not make the exam a requirement for graduation until 2003–04.
- If a pupil does not possess sufficient English language skills to be assessed by the exit exam, the district may defer the requirement that the student pass the exam “for a period of up to 24 calendar months of enrollment in the California public school system until the pupil has completed six months of instruction in reading, writing, and comprehension in the English language.”

#### **College Entrance Requirements**

Parents generally know that many colleges require good high school grades for admission.

Although grades are important, students do not have to have top grades to get into college. There are colleges for every student. You should also know that students need to take a specific series of college preparatory classes in high school, and the minimum requirements vary depending on the selected college or university. The a–g requirements noted below are submitted by the Regents of the University of California and are generally the most rigorous:

- a. An English class every semester of every year for four years.
- b. A mathematics class every semester of every year for three years, including algebra and geometry. Four years are recommended.
- c. Two years of a laboratory science beyond the ninth grade. An additional year is recommended.
- d. Two years of history–social science, which are to include U.S. government, world history, culture, and geography.
- e. Two years of the same language other than English.
- f. Two years of college preparatory electives in addition to those required in “a–e” above.
- g. One year of visual and performing arts, effective for the entering class of 2003.

Every high school has a list of acceptable classes and can tell you how many should be taken. At least one class in the area of visual or performing arts is a good choice for many students.

To gain admission to college, your children must also take either the Scholastic Assessment Test (SAT) or the American College Test (ACT) and submit the scores. Find out when the tests are given and be sure your children sign up to take one of them.

# CHEMISTRY

## *The California High School Chemistry Content Standards*

CALIFORNIA  
DEPARTMENT  
OF EDUCATION

2001

# Chemistry

## Atomic and Molecular Structure

1. The periodic table displays the elements in increasing atomic number and shows how periodicity of the physical and chemical properties of the elements relates to atomic structure.

## Chemical Bonds

2. Biological, chemical, and physical properties of matter result from the ability of atoms to form bonds based on electrostatic forces between electrons and protons, and between atoms and molecules.

## Conservation of Matter and Stoichiometry

3. The conservation of atoms in chemical reactions leads to the principle of conservation of matter and the ability to calculate the mass of products and reactants.

## Gases and Their Properties

4. The kinetic molecular theory describes the motion of atoms and molecules and explains the properties of gases.

## Acids and Bases

5. Acids, bases, and salts are three classes of compounds that form ions in water solutions.

## Solutions

6. Solutions are homogeneous mixtures of two or more substances.

## Chemical Thermodynamics

7. Energy is exchanged or transformed in all chemical reactions and physical changes of matter.

## Reaction Rates

8. Chemical reaction rates depend on factors that influence the frequency of collision of reactant molecules.

## Chemical Equilibrium

9. Chemical equilibrium is a dynamic process at the molecular level.

## Organic and Biochemistry

10. The bonding characteristics of carbon lead to many different molecules with varied sizes, shapes, and chemical properties, providing the biochemical basis of life.

## Nuclear Processes

11. Nuclear processes are those in which an atomic nucleus changes, including radioactive decay of naturally occurring and man-made isotopes, nuclear fission, and nuclear fusion.

## Investigation and Experimentation

1. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, and to address the content of the other four strands, students should develop their own questions and perform investigations. Students will:
  - a. Select and use appropriate tools and technology (such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests, collect data, analyze relationships, and display data.
  - b. Identify and communicate sources of unavoidable experimental error.

- c. Identify possible reasons for inconsistent results, such as sources of error or uncontrolled conditions.
- d. Formulate explanations using logic and evidence.
- e. Solve scientific problems using quadratic equations and simple trigonometric, exponential, and logarithmic functions.
- f. Distinguish between hypothesis and theory as scientific terms.
- g. Recognize the usefulness and limitations of models and theories as scientific representations of reality.
- h. Read and interpret topographic and geologic maps.
- i. Explain the relative locations, sequences, or time intervals that are characteristic of natural phenomena (e.g., relative ages of rocks, locations of planets over time, and succession of species in an ecosystem).
- j. Recognize the issues of statistical variability and the need for controlled tests.
- k. Recognize the cumulative nature of scientific evidence.
- l. Analyze situations and solve problems that require combining and applying concepts from more than one area of science.
- m. Investigate a science-based societal issue by researching the literature, analyzing data, and communicating the findings. Examples include irradiation of food, cloning of animals by somatic cell nuclear transfer, choice of energy sources, and land and water use decisions in California.